Notice of Allowability	Application No.	Applicant(s)	
	10/614,116	TICE ET AL.	
	Examiner	Art Unit	
	Ileana Popa	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *05/14/2007*.

2. ☒ The allowed claim(s) is/are *6-17*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Ileana Popa

JOSEPH WOITACH, PH.D
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

During the interview that took place on April 25, 2007, Applicant presented convincing data demonstrating that the ecdysone receptor binding does not necessarily correlate with the ability of a compound to function as a gene switch activator (see also the Declaration under 27 C.F.R. 1.132 by Dr. Hormann, Exhibits 2 , 3, and 5). Because of this lack of correlation, the Examiner acknowledges that it cannot be predicted whether a compound capable of binding the ecdysone receptor would necessarily function as a gene switch activator. Applicant also presented data regarding the importance of the right-hand carbonyl group for the function of gene switch activator. Applicant pointed out that the right-hand carbonyl group is absent in the compounds taught by the references cited by the Examiner, and therefore, even if tested for theeir gene sweitch activity, these compounds would not anticipate or render the claimed invention obvious. Regarding Examiner's argument that it would have been obvious to one of skill in the art to vreate derivatives based on the central core of DTBHIB taught by Dhadialla et al., Applicant points out that the amidoketone structure of the compounds of the present invention is the core structure of the claimed compounds and that removal of right-hand carbonyl group would eliminate most or all of the ability of the compound to function as a gene switch activator. Along these lines, Applicant provides data demonstrating that the right-hand carbonyl group in diacylhydrazine ecdysone analogs (which structurally corresponds to the right-hand carbonyl groups of the instant compounds) is required for gene switch activation, wherein the analogs without the right-hand carbonyl group are inactive (see the Declaration under 27 C.F.R. 1.132 by Dr. Hormann, Exhibit 4). For these reasons, Applicant's argument that, since it does not contain a right-hand carbonyl group, DTBHIB does not have the same central core as the instant compounds, and therefore, a library around the central core of DTBHIB woiuld not produce the present compounds is found persuasive. With respect to Michelotti et al., Applicant argues that there is no teaching, motivation, or suggestion that their compounds function as pesticides or have the ability to bind the ecdysone receptor. Applicant provides data demonstrating that compounds that fall within the scope of compounds disclosed by Michelotti et al., as well as numerous other compounds, which have similar structure with respect to a haloalkyl group at one end and aryl group at the other end, are essentially inactive as gene switch activators (see the Declaration under 27 C.F.R. 1.132 by Dr. Hormann, Exhibit 5). Applicant's argument is found persuasive; the Examiner acknowledges that Michelotti et al. only teach their compounds as fungicides that are not toxic for plants and that there is no disclosure that their compounds could bind the ecdysone receptor or function as pesticides. It is however noted that prior art, other than Michelotti et al., art teaches these compounds as pesticides and insecticides (see for example Nakamura et al., PGPUB 2003/0153464, Abstract, p. 1, paragraphs 0003-0007, p. 4, paragraph 0058, claims 1-4 and 6-8). However, the art also teaches that just it is not predictable that pesticides would necessarilly function as ecdysone gene switch (see Saez et al., of record, p. 14514, column 2, second full paragraph). Therefore, one of skill in the art would not have been motivated to look at the compounds of Michelotti et al. as possible ecdysone agonsits.

Given all of the above, it is concluded that the claimed invention was not prima facie obvious over the prior art, at the time the invention was made.

The invention is useful for modulating proteins expression in vitro and in vivo, wherein modulation in vivo can take place both temporally and spatially. It is noted that the art teaches transgenic cells, plants, and animals that express ecdysone gene switch systems (see for example Ryding et al., J Endocrinol, 2001, 171: 1-14; Martinez et al., The Plant Journal, 1999, 19: 97-106) and therefore, the claimed compounds are useful to modulate gene expression in all of these systems.